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(21) International Application Number: PCT/EP99/04905 (22) International Filing Date: 13 July 1999 (13.07.99) (30) Priority Data: 9819564.7 8 September 1998 (08.09.98) GB (71) Applicant (for all designated States except US): SOCIETE DES PRODUITS NESTLE S.A. [CH/CH]; P.O. Box 353, CH-1800 Vevey (CH). (72) Inventors; and (75) Inventors/Applicants (for US only): CONTI, Claudia [IT/GB]; 73, Union Terrace, York YO31 7ES (GB). MOPPETT, Garry, Dean [GB/GB]; Springfield Two, 59, Strensall Road, Huntington, York YO32 9SH (GB). (74) Agent: PATE, George, Frederick; Avenue Nestlé 55, CH-1800 Vevey (CH).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>
(54) Title: SUGAR WAFERS (57) Abstract A sugar wafer and a sugar wafer batter in which part of the wheat flour is replaced by cereal grits or all or part of the sucrose is replaced by a reducing sugar as well as confectionery products comprising them.		

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SUGAR WAFERS

FIELD OF THE INVENTION

5 The present invention relates to wafers, more particularly to sugar wafers and processes of preparing them.

BACKGROUND OF THE INVENTION

10 Wafers are normally made from batter recipes using from about 20% to 60% by weight of flour, water and sucrose (which may be brown or white) together with smaller quantities of one or more ingredients typically used in a sugar wafer such as fat, milk, cream, milk powder, whole egg, egg powder, soya flour, salt, lecithin, colourant, cocoa powder, flavours, emulsifiers, vanilla crystals and a raising agent.
15 The flour is usually wheat flour but it may be another flour such as rice flour or a flour admixed with a starch. Wafers usually have a low fat content, normally from 1-2% but in some cases up to 10% and the main function of the fat is as an antisticking/releasing agent. Sugar wafers differ from standard wafers in containing a higher sugar content, e.g. from about 40% to 70% compared with less
20 than 5% for standard wafers.

Wafers may be distinguished from biscuits/cookies in that wafers are the result of baking a batter whereas biscuits/cookies are baked out of a dough. Batter normally has a water content of more than 100 parts per 100 parts of flour and is a liquid
25 suspension that will flow through a pipe whereas biscuit dough is rather stiff to permit rolling and flattening and has a water content of less than 50 parts per 100 parts of flour.

A major problem with standard sugar wafers is that they tend to lose their
30 crispiness with time by absorbing moisture which softens them and therefore lose their characteristic desirable textural properties. After baking the batter, there is only a limited amount of time, usually up to about 40 seconds, during which the wafers stay sufficiently flexible to allow further processing, such as modifying the shape or filling a tubular shaped wafer.

35

SUMMARY OF THE INVENTION

We have found that by replacing part of the wheat flour in a wafer batter by cereal grits and/or replacing all or part of the sucrose with a reducing sugar, we can
5 obtain a sugar wafer that is sufficiently flexible over a longer period of time when compared with standard sugar wafers to allow further processing while retaining its characteristic desirable crispiness when cooled. In addition, we can obtain a sugar wafer which is harder, is more crunchy and has a more coarse and gritty texture than a conventional sugar wafer.

10

According to the present invention, there is provided a sugar wafer batter in which part of the wheat flour is replaced by cereal grits or all or part of the sucrose is replaced by a reducing sugar.

15

DETAILED DESCRIPTION OF THE INVENTION

The cereal grits may be, for instance, corn grits, maize grits, wheat grits, oat grits or rice grits, etc. or any combination of two or more thereof.

20

The amount of water in the sugar wafer batter of the present invention is usually from 100 to 160 parts and more preferably from 120 to 140 parts by weight per 100 parts by weight of the flour or, where part of the wheat flour is replaced by cereal grits, per 100 parts of the total weight of the wheat flour and cereal grits.

25

The amount of sucrose or, where all or part of the sucrose is replaced by a reducing sugar, the total amount of sucrose and reducing sugar in the sugar wafer batter of the present invention is usually from 50 to 100 parts and more preferably from 60 to 85 parts by weight per 100 parts by weight of the flour or, where part of the wheat flour is replaced by cereal grits, per 100 parts of the total weight of
30 the wheat flour and cereal grits.

In a first embodiment of this invention, up to 90% by weight of the wheat flour in a standard sugar wafer batter may be replaced by the cereal grits but preferably from 20% to 60% and more preferably from 25% to 45 % by weight of the wheat
35 flour may be replaced by the cereal grits.

Corn grits are also known as corn meal which is a ground product obtained by dry milling the endosperm of corn. The particle sizes typically vary from about 100 microns to about 1mm, and more usually from 150 to 500 microns.

5 Alternatively, in a second embodiment of this invention, all or part of the sucrose in a standard sugar wafer batter may be replaced by a reducing sugar. For example, from 15 to 80% by weight of the sucrose may be replaced by the reducing sugar but preferably from 20% to 50% and more preferably from 25% to 40% by weight of the sucrose may be replaced by the reducing sugar. The
10 reducing sugar may be, for example, fructose, glucose, glucose syrup, dextrose, corn syrup, invert sugar, fruit juices containing reducing sugars such as grape juice, or honey.

15 Advantageously, both part of the flour in a standard sugar wafer batter is replaced by cereal grits and part of the sucrose in a standard sugar wafer batter is replaced by a reducing sugar.

The sugar wafers may be prepared by baking a sugar wafer batter according to the invention as hereinbefore described. The sugar wafer batter may be baked by
20 conventional methods, for example, using a baking oven, a baking machine, a moulding cone, baking plates, or on the surface of a sugar wafer drum well known to those skilled in the art to give the sugar wafer. The baking temperature may be from 140°C to 180°C, preferably from 150°C to 170°C and more usually from 160°C to 165°C. The baking may be carried out over a period of from 0.5 to 2
25 minutes and preferably from 0.75 to 1.5 minutes.

Accordingly, the present invention also provides a sugar wafer in which part of the flour is replaced by cereal grits or all or part of the sucrose is replaced by a reducing sugar.

30

The amount of water in the sugar wafer according to the present invention is usually from about 0.5% to 6% and preferably from 0.75 to 3% by weight based on the total weight of the sugar wafer.

35

The remaining ingredients of the sugar wafer according to the present invention, based on the weight of the wheat flour or, where part of the wheat flour is

replaced by cereal grits, per 100 parts of the total weight of the wheat flour and cereal grits, remain substantially the same.

5 The total amount of water, fat, wheat flour and sucrose together with their replacements in the sugar wafer usually accounts for at least 95%, e.g. from 96% to 98% by weight of the sugar wafer. The remaining ingredients include one or more ingredients typically used in a sugar wafer such as milk, cream, milk powder, whole egg, egg powder, soya flour, salt, lecithin, a colourant such as caramel colour, cocoa powder, flavours, emulsifiers, vanilla crystals and a raising agent.

10 The sugar wafers according to the present invention may have a variety of shapes and sizes, e.g. they may be flat sheets, cup or cone-shaped or they may be tubular. If desired, the sugar wafers may be further processed after baking, e.g. they may be crimped, pressed or shaped in a mould. They may be used in a variety of confectionery products together with confectionery materials such as ice creams or chocolates or other fatty materials such as fat-based cream. The tubular wafers may be filled with confectionery materials preferably of low water activity so that a minimum of moisture migration occurs, e.g. savoury filling, ice cream or fat-based creams containing yoghurt. The sugar wafers of the present invention are sufficiently flexible under ambient conditions after baking for more than 40 seconds, usually for more than 50 seconds, e.g. up to 70 seconds or more to enable further processing.

25 The present invention further provides a confectionery product comprising a sugar wafer according to the present invention together with a confectionery material.

30 The sugar wafer may be used in direct contact with confectionery material or, if desired, a moisture barrier may be used between the surface of the sugar wafer and the other confectionery material, e.g. the moisture barrier may conveniently be coated on the surface of the sugar wafer adjacent the confectionery material. Any conventional food-acceptable moisture barrier may be used, but preferably a fat-based moisture barrier such as chocolate or chocolate substitute may be used.

When the confectionery product comprising the sugar wafer is used in direct contact with a confectionery material, the confectionery material preferably has a low water activity, e.g. a water activity below 0.5 and preferably below 0.3.

- 5 The confectionery product comprising the sugar wafer may, if desired, be enrobed with another suitable confectionery material, for example, with plain, white or milk chocolate or with chocolate substitute.

10 The confectionery product comprising the sugar wafer may be refrigerated or frozen.

EXAMPLES

The following Examples further illustrate the present invention

15

Example 1

A sugar wafer batter is prepared having the following ingredients:

20	Water	41.8%
	Wheat flour	19.4%
	Corn grits	12.9%
	Brown sugar	15.3%
	Honey	7.9%
25	*Other ingredients	2.7%

* includes milk powder, egg powder, soya flour, salt, lecithin and vanilla crystals.

30 The above batter is fed as a suspension onto the surface of a drum of a wafer baking machine and baked at 162°C for 1 minute to form a wafer sheet having a water content of below 5% by weight. The wafer sheet is then passed to a spindle and rolled to form a tube. The tube is filled with a fat-based cream containing yoghurt, closed at each end and shaped mechanically as desired. The wafer is sufficiently flexible over a period of 60 seconds after baking which allows this
35 further processing. The tube is finally enrobed with a layer of plain chocolate.

The product is then refrigerated.

On eating, a panel of seven expert tasters found that the wafer was harder, more crunchy and had a more coarse and gritty texture than a conventional sugar wafer.

5 These findings were supported by mechanical and sensory analysis.

Immediately after baking, the sugar wafer was found to remain flexible for over 100 seconds which is significantly longer than a standard wafer. In addition the cooling rate was reduced compared with a standard wafer, and the temperature at
10 which the wafer became brittle was also reduced to 77°C compared with 93°C for a standard wafer.

CLAIMS

1. A sugar wafer batter in which part of the wheat flour is replaced by cereal grits or all or part of the sucrose is replaced by a reducing sugar.
- 5 2. A sugar wafer batter according to claim 1 wherein cereal grits are corn grits, maize grits, wheat grits, oat grits or rice grits, or any combination of two or more thereof.
- 10 3. A sugar wafer batter according to claim 1 in which the amount of water in the sugar wafer batter of the present invention is from 100 to 160 parts by weight per 100 parts by weight of the flour or, where part of the wheat flour is replaced by cereal, per 100 parts of the total weight of the wheat flour and cereal grits.
- 15 4. A sugar wafer batter according to claim 1 in which the amount of sucrose or, where part of the sucrose is replaced by a reducing sugar, the total amount of sucrose and reducing sugar in the sugar wafer batter is from 50 to 100 parts by weight per 100 parts by weight of the flour or, where part of the wheat flour is replaced by cereal grits, per 100 parts of the total weight of the wheat flour and
20 cereal grits.
5. A sugar wafer batter according to claim 1 in which up to 90% by weight of the wheat flour in a standard sugar wafer batter is replaced by the cereal grits.
- 25 6. A sugar wafer batter according to claim 1 in which from 15% to 80% by weight of the sucrose is replaced by the reducing sugar.
7. A sugar wafer batter according to claim 1 in which the reducing sugar is fructose, glucose, glucose syrup, dextrose, corn syrup, invert sugar, fruit juices
30 containing reducing sugars such as grape juice, or honey.
8. A sugar wafer batter according to claim 1 in which both part of the wheat flour in a standard sugar wafer batter is replaced by cereal grits and all or part of the sucrose in a standard sugar wafer batter is replaced by a reducing sugar.

9. A process for preparing a sugar wafer which comprises baking a sugar wafer batter according to claim 1.
10. A sugar wafer in which part of the wheat flour is replaced by cereal grits or all or part of the sucrose is replaced by a reducing sugar.
11. A sugar wafer according to claim 10 in which the amount of water in the sugar wafer is from about 0.5% to 6% by weight based on the total weight of the sugar wafer.
12. A sugar wafer according to claim 10 in which the total amount of water, fat, wheat flour and sucrose together with their replacements accounts for at least 95% by weight of the sugar wafer and the remaining ingredients include one or more of milk, cream, milk powder, whole egg, egg powder, soya flour, salt, lecithin, vanilla crystals and a raising agent.
13. A sugar wafers according to claim 10 which is sufficiently flexible under ambient conditions after baking for more than 40 seconds to enable further processing.
14. A confectionery product comprising a sugar wafer according to claim 10 together with a confectionery material.
15. A confectionery product according to claim 14 wherein the sugar wafer is used in direct contact with confectionery material.
16. A confectionery product according to claim 14 wherein a moisture barrier is used between the surface of the sugar wafer and the other confectionery material.
17. A confectionery product according to claim 16 wherein the moisture barrier is coated on the surface of the sugar wafer adjacent the confectionery material.
18. A confectionery product according to claim 15 wherein when the sugar wafer is used in direct contact with a confectionery material, the confectionery material has a water activity below 0.5.

19. A confectionery product according to claim 14 wherein the confectionery product comprising the sugar wafer is enrobed with plain, white or milk chocolate or with chocolate substitute.

INTERNATIONAL SEARCH REPORT

International Application No

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A21D10/04 A21D13/08 A21D2/36 A21D2/18 A23G3/00
A23G9/02

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A21D A23G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 08, 30 June 1999 (1999-06-30) -& JP 11 075677 A (EZAKI GLICO CO LTD), 23 March 1999 (1999-03-23) abstract	1, 9, 10, 14
A	C.D. BARNETT: "Colombina - South American plant utilizes native raw materials" CANDY AND SNACK INDUSTRY, vol. 138, no. 2, 1973, pages 30-32, XP000853527 page 31, column 3, last paragraph -page 32, column 1, paragraph 1 page 32, column 1, last paragraph -column 2, paragraph 1 --- -/-	1, 7, 9, 10

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	B. MANUHARKUMAR ET AL.: "Mischmehle mit indischem Mais für die Herstellung von Mürbkeks und Flachwaffeln" GETREIDE MEHL UND BROT., vol. 32, no. 5, 1978, pages 121-124, XP000853547 BOCHUM., DE ISSN: 0367-4177 page 121, column 2, last paragraph -page 122, column 1, paragraph 3 page 123, column 2, paragraph 2 -page 124, column 2, paragraph 1 ---	1,2,5,9, 10
A	DE 196 48 506 C (DAHLI KUCHEN F DAHLHOFF GMBH &) 30 October 1997 (1997-10-30) page 4, line 31 - line 39 claims 1,4,6 ---	1,7,9, 10,14
A	DATABASE WPI Section Ch, Week 199624 Derwent Publications Ltd., London, GB; Class D11, AN 1996-232976 XP002122523 & HU 70 252 A (INTERKOLLOID EELMISZERIPARI ADALEKANYAG), 28 September 1995 (1995-09-28) abstract ---	1,7
P,A	WO 99 02042 A (NESTLE SA ;ROCHAT FLORENCE (CH); PFEIFER ANDREA M A (CH); LESENS C) 21 January 1999 (1999-01-21) examples 1,2,4 -----	1,7,9-18

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 99/04905

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 11075677 A	23-03-1999	NONE	
DE 19648506 C	30-10-1997	NONE	
HU 70252 A	28-09-1995	NONE	
WO 9902042 A	21-01-1999	AU 8800298 A	08-02-1999

Form PCT/ISA/210 (patent family annex) (July 1992)